AMENDMENT TO THE CLAIMS

Please amend the claims as shown below. The complete listing of the claims below replaces all previous listings.

1. (Currently amended) A method of preparing nanoparticles having at least one polymer shell attached thereto, said method comprising:

providing a nanoparticle and initiation monomers, the nanoparticle having a surface; ~~and~~

attaching the initiation monomers to the surface of the nanoparticle;

contacting the nanoparticle having the initiation monomers attached thereto with a transition metal ring-opening metathesis catalyst to activate the initiation monomers; and

contacting the nanoparticle with propagation monomers of the formula P-L-N under conditions effective so that the propagation monomers are polymerized to form at least one polymer shell attached to the nanoparticles,

wherein:

N is a cyclic olefin-containing group;

P is a moiety which gives each polymer shell one or more selected properties; and

L is a bond or linker whereby N is attached to P.

2. (Previously presented) The method of Claim 1 wherein the initiation monomers comprise cyclic olefin-containing groups.

3. (Previously presented) The method of Claim 2 wherein the initiation monomers comprise norbornenyl groups.

4. (Previously presented) The method of Claim 1 wherein the nanoparticle is a gold nanoparticle.

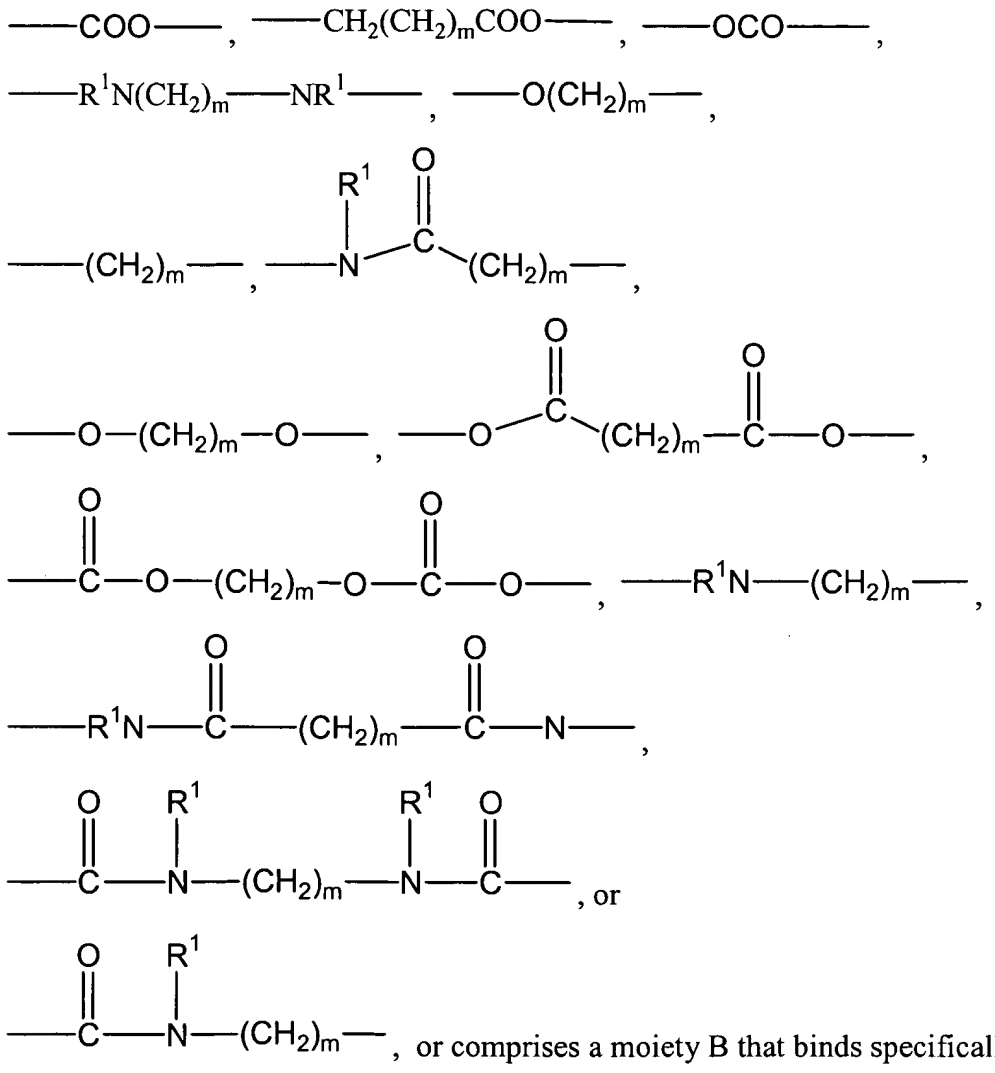
5. (Previously presented) The method of Claim 4 wherein the initiation monomers are norbornenyl- containing alkanethiol.

6. (Previously presented) The method of Claim 5 wherein the initiation monomers are 1-mercapto-10-(*exo*-5-norbornen-2-oxy)-decane.

7. (Previously presented) The method of Claim 1 wherein the initiation monomers are mixed with attachment compounds, and both the initiation monomers and the attachment compounds are attached to the surface of the nanoparticle.

8. (Cancelled)

9. (Currently amended) The method of Claim ~~8~~ 1 wherein L is a polymer,



, or comprises a moiety B that binds specifically to an analyte;

wherein:

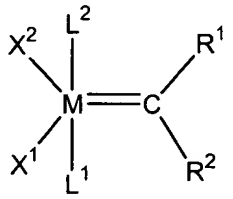
R^1 has the formula X (CH_2)m;

X is $-CH_3$, $-CHCH_3$, -COOH, $-CO_2(CH_2)mCH_3$, -OH, $-CH_2OH$, ethylene glycol, hexa(ethylene glycol), $-O(CH_2)mCH_3$, $-NH_2$, $-NH(CH_2)mNH_2$, halogen, glucose, maltose, fullerene C60, a cyclic olefin, or a nucleic acid; and

m is 0 – 30.

10. (Currently amended) The method of Claim 1 ~~8~~ wherein N is a norbornenyl-containing group.

11. (Currently amended) The method of Claim 1 ~~8~~ or 10 wherein the catalyst has the formula:



wherein:

M is osmium or ruthenium;

R^1 is hydrogen;

X^1 and X^2, which may be different or the same, are any anionic ligand;

L^1 and L^2, which may be different or the same, are any neutral electron donor; and

R^2 is hydrogen, substituted or unsubstituted alkyl, or substituted or unsubstituted aryl.

12. (Previously presented) The method of Claim 11 wherein M is ruthenium, R^1 is hydrogen, R^2 is phenyl, X^1 and X^2 are both –Cl, and L^1 and L^2 are both tricyclohexylphosphine.

13. (Currently amended) The method of Claim 1 ~~8~~ or 10 wherein the catalyst has the formula:

$$[Re(CR^1)(CHR^2)(R^3)R^4)]n$$

wherein:

Re is rhenium (VII);

R^1 is selected from the group consisting of an alkyl having 1-20 carbon atoms, an aryl having 6-20 carbon atoms, an arylalkyl having 7-30 carbon atoms, halogen substituted derivatives of one of the alkyl, aryl, or arylakyl, and silicon-containing analogs of one of the alkyl, aryl, or arylalkyl;

R^2 is R^1 or is a substituent resulting from the reaction of the $Re{=}CHR^2$ moiety of the catalyst with an olefin that is being metathesized;

R^3 and R^4 are ligands which individually or together are sufficiently electron withdrawing to render the rhenium atom electrophilic enough for metathesis reaction; and

n is 1 or more.

14. (Currently amended) The method of Claim 1 ~~8~~ or 10 wherein the catalyst has the formula:

$$M(NR^1)(OR^2)_2(CHR^3),$$

wherein:

M is molybdenum or tungsten;

R^1 and R^2 each individually may be an alkyl containing 1-20 carbon atoms, an aryl containing 6-20 carbon atoms, an arylalkyl containing 7-20 carbon atoms, a halogen substituted derivative of the alkyl, aryl, or arylalkyl, or a silicon-containing analog of one of the alkyl, aryl, or arylalkyl; and

R^3 is an alkyl containing 1-20 carbon atoms, an aryl containing 6-20 carbon atoms, an aralkyl containing 7-20 carbon atoms, or a substituent resulting from the reaction of the $M{=}CHR^3$ moiety of said catalyst with an olefin being metathesized.

15. (Currently amended) The method of Claim 1 ~~8~~ or 10 wherein the nanoparticle is contacted with propagation monomers under conditions effective so that the monomers are polymerized to form a polymer shell attached to the nanoparticle.

16. (Original) The method of Claim 15 wherein the polymer shell has redox activity.

17. (Original) The method of Claim 16 wherein the propagation monomer is *exo*-5-norbornen-2-yl ferrocenecarboxylate or *exo*-5-norbornen-2-yl ferroceneacetate.

18. (Currently amended) The method of Claim 1 ~~8~~ or 10 wherein:

the nanoparticle is contacted with a plurality of different propagation monomers under conditions effective so that the monomers are polymerized to form one or more polymer shells attached to the nanoparticle, each polymer shell having one or more selected properties.

19. (Previously presented) The method of Claim 18 wherein:

the nanoparticle is contacted with first propagation monomers under conditions effective so that the monomers are polymerized to form a first polymer shell attached to the nanoparticles, the first polymer shell having a first selected property; and

then the nanoparticle is contacted with second propagation monomers under conditions effective so that the monomers are polymerized to form a second polymer shell attached to the first polymer shell, the second polymer shell having a second selected property which is different from the first selected property of the first polymer shell.

20. (Original) The method of Claim 19 wherein one of the polymer shells has redox activity.

21. (Previously presented) The method of Claim 20 wherein the propagation monomers polymerized to form the shell is *exo*-5-norbornen-2-yl ferrocenecarboxylate or *exo*-5-norbornen-2-yl ferroceneacetate.

22. (Original) The method of Claim 19 wherein the both polymer shells have redox activity.

23. (Original) The method of Claim 22 wherein the two polymer shells have different redox activities.

24. (Previously presented) The method of Claim 23 wherein the propagation monomers polymerized to form the first polymer shell is *exo*-5-norbornen-2-yl ferrocenecarboxylate and the propagation monomers polymerized to form the second polymer shell is *exo*-5-norbornen-2-yl ferroceneacetate.

25. (Currently amended) The method of Claim ~~1~~ 8 or 10 wherein the polymerization is stopped by adding a compound that terminates polymerization.

26. to 30. (Cancelled)

31. (Previously presented) Nanoparticles comprising one or more polymer shells attached thereto, the polymer shells being formed by polymerizing propagation monomers of the formula P-L-N,

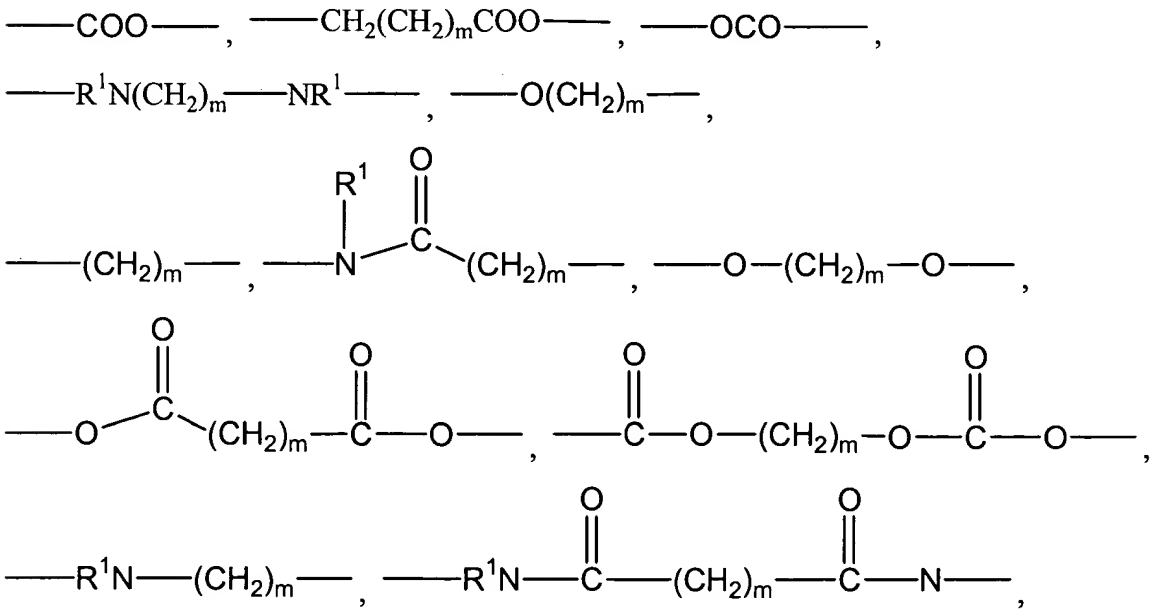
wherein:

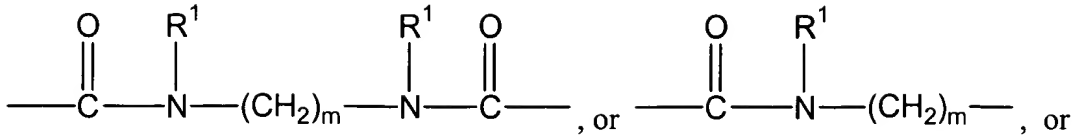
P is a moiety which provides a desired property or properties to each of the polymer shells;

N is a cyclic olefin-containing group; and

L is a bond or a linker whereby N is attached to P.

32. (Previously amended) The nanoparticles of Claim 31 wherein L is a polymer,





comprises a binding moiety B that binds specifically to an analyte,

wherein:

R^1 has the formula $X(CH_2)m$;

X is $-CH_3$, $-CHCH_3$, $-COOH$, $-CO_2(CH_2)mCH_3$, $-OH$, $-CH_2OH$, ethylene glycol, hexa(ethylene glycol), $-O(CH_2)mCH_3$, $-NH_2$, $-NH(CH_2)mNH_2$, halogen, glucose, maltose, fullerene C60, a cyclic olefin, or a nucleic acid; and

m is 0 – 30.

32. (Original) The nanoparticles of Claim 31 wherein N is a norbornenyl-containing group.

34. (Original) The nanoparticles of Claim 31 or 33 having a single polymer shell attached to them.

35. (Original) The nanoparticles of Claim 31 or 33 having a plurality of polymer shells attached to them.

36. (Original) The nanoparticles of Claim 35 having two polymer shells attached to them, the first polymer shell and the second polymer shell having different properties.

37. (Original) The nanoparticles of Claim 34 wherein the polymer shell has redox activity.

38. (Original) The nanoparticles of Claim 35 wherein one of the polymer shells has redox activity.

39. (Original) The nanoparticles of Claim 36 wherein the first polymer shell has redox activity and the second polymer shell has redox activity different than that of the first polymer shell.

40. (Original) The nanoparticles of Claim 31, 32, or 33 wherein a polymer shell comprises a binding moiety B that binds specifically to an analyte.

41. (Previously presented) The nanoparticles of Claim 40 wherein the polymer shell comprising the binding moiety B is formed by polymerizing binding monomers of the formula N-L-B, wherein N, L, and B have the same meanings as in Claim 40.

42. (Previously presented) The nanoparticles of Claim 41 wherein the polymer shell comprising the binding moiety B is formed by polymerizing a mixture of binding monomers and one or more propagation monomers.

43. to 85. (Cancelled)

86. (Previously presented) The method of claim 1 wherein the initiation monomers are the same.

87. (Previously presented) The method of claim 1 wherein the initiation monomers are different.

88. (Currently amended) The method of claim 1 ~~8~~ wherein the propagation monomers are the same.

89. (Currently amended) The method of claim 1 ~~8~~ wherein the propagation monomers are different.

90. (Previously presented) The nanoparticles of claim 31 wherein the propagation monomers are the same.

91. (Previously presented) The nanoparticles of claim 31 wherein the propagation monomers are different.

92. (Previously presented) The nanoparticles of claim 41 wherein the binding monomers are the same.

93. (Previously presented) The nanoparticles of claim 41 wherein the binding monomers are different.